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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,467	09/11/2003	Takahiro Usui	9319G-000559	4958
27572	7590	06/14/2005	EXAMINER	
HARNESSE, DICKEY & PIERCE, P.L.C.			HAUPT, KRISTY A	
P.O. BOX 828			ART UNIT	
BLOOMFIELD HILLS, MI 48303			PAPER NUMBER	
			2853	

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/660,467	<b>Applicant(s)</b> USUI, TAKAHIRO	
	<b>Examiner</b> Kristy A. Haupt	<b>Art Unit</b> 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-13 is/are rejected.
- 7) ☐ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Priority*

The Examiner acknowledges the Applicant's request for priority under 35 USC § 119 for Application Number 10/660,467 filed September 11, 2003.

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

- Figure 1 lacks reference number 12B, the front portion of the base, as stated on Page 9, Line 7.
- Figure 1 lacks reference number 52, preliminary discharge area, as stated on Page 9, Line 22.
- Figure 3 lacks reference number 26, ink feed tube, as stated on Page 11, Line 11.
- Reference number b3, as stated on Page 12, Line 9 in the DETAILED DESCRIPTION OF THE INVENTION is not referenced in Figure 5. The Examiner believes the Applicant was referring to reference number b2.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

- Reference number a3 as shown in Figure 4 is not explained in the DETAILED DESCRIPTION OF THE INVENTION

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Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 3, 4, 6, 7, 8, 9, 10, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. US 6,431,674 B2.

With respect to claim 1, Suzuki et al. teaches:

- A method of driving a film forming apparatus that discharges liquid drops by imparting vibrations to a liquid (Column 4, Lines 29-32)
- Controlling the vibrations by a first signal that causes liquid drops to be discharged (Column 5, Lines 13-19)

- Controlling the vibrations by a second signal that does not cause liquid drops to be discharged (Column 1, Lines 37-41) and that imparts a shear rate to the liquid that lowers a viscosity of the liquid (Column 16, Lines 37-41)

With respect to claim 2, Suzuki et al. teaches:

- Wherein the second signal is transmitted before the first signal is transmitted (Figure 10 teaches a non-print signal before a print signal)

With respect to claim 3, Suzuki et al. teaches:

- Wherein the second signal is transmitted after the first signal is transmitted (Figure 10 also teaches a non-print signal after a print signal)

With respect to claim 4, Suzuki et al. teaches:

- Wherein the second signal is transmitted at least once after a time when the first signal is transmitted and before a time when the first signal is transmitted again (Figure 18a where printing takes place until the deceleration period, T6, where the meniscus minutely vibrates (Column 14, Lines 37-40) until the rest time of the carriage, T7, after which the meniscus minutely vibrates again in the carriage acceleration period, T3, where it is then suspended, T4, after which printing again takes place in T5 or Figure 10)

With respect to claim 6, Suzuki et al. teaches:

- Wherein the liquid is a non-Newtonian, pseudo plastic fluid body (Column 16, Lines 37-41 discloses that velocity is increased to increase the fluidity of ink. Applicant discloses that non-Newtonian fluids have a viscosity that depends on shear rate, which is velocity related. Pseudo plastic fluids decrease in viscosity as mixing increases, which is taught by Suzuki in Column 13, Lines 36-38)

With respect to claim 7, Suzuki et al. teaches:

- Forming a film on a substrate (Column 2, Lines 4-5) as a result of liquid drops being discharged by a liquid drop discharge apparatus (Column 1, Lines 5-7)

With respect to claim 8, Suzuki et al. teaches:

- A liquid drop discharge apparatus that discharges liquid drops (Column 1, Lines 5-7)
- A pressure generating chamber provided in the liquid drop discharge apparatus, imparting vibrations to a liquid (Column 1, Lines 53-55)
- A pressure generating device provided in the pressure generating chamber (Column 2, Lines 37-38)
- A control device that controls the pressure generating device such that vibrations are imparted to the liquid (Column 2, Lines 38-41)
- A first signal that causes the liquid drops to be discharged (Column 5, Lines 13-19; Figure 10)

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- A second signal that does not cause the liquid drops to be discharged (Column 1, Lines 37-41) and that imparts a shear rate to the liquid that lowers a viscosity of the liquid (Column 16, Lines 37-41)

With respect to claim 9, Suzuki et al. teaches:

- Wherein the liquid is a non-Newtonian, pseudo plastic fluid body (Column 16, Lines 37-41 discloses that velocity is increased to increase the fluidity of ink. Applicant discloses that non-Newtonian fluids have a viscosity that depends on shear rate, which is velocity related. Pseudo plastic fluids decrease in viscosity as mixing increases, which is taught by Suzuki in Column 13, Lines 36-38)

With respect to claim 10, Suzuki et al. teaches:

- Wherein the pressure generating device is a piezoelectric element that causes the liquid drops to be discharged by imparting vibrations to the pressure generating chamber (Column 4, Lines 30-33)

With respect to claims 12 and 13, Suzuki et al. teaches:

- A film forming apparatus that forms a film on a substrate (Column 2, Lines 4-5) as a result of liquid drops being discharged from a liquid drop discharge apparatus wherein the film forming apparatus is the apparatus according to claim 8 (Column 1, Lines 5-7)

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. US 6,431,674 B2 in view of Imanaka et al. US 6,409,300 B2.

With respect to claim 11, Suzuki et al. fails to teach "the pressure generating device comprises a foam generating apparatus that causes the liquid drops to be discharged by generating foam in the liquid, and a control apparatus that controls a driving of the foam generating apparatus such that the generated foam expands or contracts"

However, Imanaka et al. teaches:

- Wherein the pressure generating device comprises a foam generating apparatus that causes the liquid drops to be discharged by generating foam in the liquid (Column 12, Lines 65-66), and a control apparatus that controls a driving of the foam generating apparatus such that the generated foam expands or contracts (Column 1, Lines 43-44)

Therefore, it would have been obvious to one of ordinary skill in the art to use thermal energy instead of a piezoelectric element, as they are equivalent means of ejecting ink drops.



***Allowable Subject Matter***

5. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The prior art of record fails to provide sufficient teaching or motivation to one of ordinary skill in the inkjet art to provide the additionally recited features of these claims in the combinations as claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kristy A. Haupt whose telephone number is (571) 272-8545. The examiner can normally be reached on M-F 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

6/13/05

KAH

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LAMSON NGUYEN  
PRIMARY EXAMINER

06/13/05